

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently amended): An apparatus for sampling gas phase molecules, comprising:

- (a) a semi-permeable, gas-permeable membrane having a permeate side and a sample side;
- (b) a support structure that supports said semi-permeable membrane;
- (c) a heater for said semi-permeable membrane;
- [[(c)]] (d) a vacuum source that generates a reduced pressure at said permeate side of said semi-permeable membrane; and
- [[(d)]] (e) ~~an analyzer~~ a gas chromatograph in fluid communication with said permeate side of said semi-permeable membrane.

2-4. (Canceled).

5. (Currently amended): The apparatus of claim [[3]] 1, wherein said ~~gas-permeable~~ semi-permeable membrane is a polymer.

6. (Currently amended): The apparatus of claim 5, wherein said ~~gas-permeable~~ semi-permeable membrane is a tetrafluoroethylene polymer.

7. (Original): The apparatus of claim 1, further comprising a trap in fluid communication with said permeate side of said semi-permeable membrane.

8. (Original): The apparatus of claim 1, wherein said vacuum source is a vacuum pump.

9. (Original): The apparatus of claim 1, further comprising a sample loop in fluid communication with said permeate side of said semi-permeable membrane and said analyzer.

10-19. (Canceled).

20. (Currently amended): A method for sampling gas phase molecules of a sample, comprising:

- (a) placing a semi-permeable, gas-permeable, heated membrane having a permeate side and a sample side in fluid communication with the sample;
- (b) generating a reduced pressure on the permeate side of the gas-permeable membrane with a vacuum pump to draw the gas phase molecules from the sample through the gas-permeable membrane to the permeate side and then to a sample loop; and

- (c) analyzing the gas phase molecules in a gas chromatograph, wherein the gas chromatograph is in fluid communication with the sample loop.

21. (New): The apparatus of claim 1, wherein said semi-permeable membrane does not permit bulk flow of liquids or solids.

22. (New): The apparatus of claim 1, wherein said semi-permeable membrane comprises a screen coated with a polymer.

23. (New): The apparatus of claim 22, wherein said screen comprises stainless steel.

24. (New): The apparatus of claim 22, wherein said polymer is a tetrafluoroethylene polymer.

25. (New): The apparatus of claim 1, wherein the semi-permeable membrane is in contact with a soil surface.

26. (New): The apparatus of claim 1, wherein the semi-permeable membrane is in contact with a liquid surface.

27. (New): The method of claim 20, wherein the semi-permeable membrane comprises a screen coated with a polymer.

28. (New): The method of claim 27, wherein the screen comprises stainless steel.

29. (New): The method of claim 27, wherein the polymer is a tetrafluoroethylene polymer.